Fisheries and Oceans Science / Pêches et Océans Sciences

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Research Document 2000/033

Document de recherche 2000/033

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Status of north Labrador Arctic charr stocks, 1999

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This document is available on the Internet at:
http://www.dfo-mpo.gc.ca/csas/

Ce document est disponible sur l'Internet à:

ISSN 1480-4883
Ottawa, 2000

Canada

Abstract

Catch and effort statistics for the northern Labrador Arctic charr fishery in 1999 are summarized and information on catch-at-age and weight-at-age updated along with tag recapture data. Landings of 40.5 tonnes were 8.2% higher than the previous year and were the highest recorded since 1992. Overall, effort in recent years is still low, relative to the 1980's, and interpretation of current commercial catch rates as an index of stock abundance, could be problematic. Landings of anadromous Arctic charr from the Nain Fishing Region over the past 26 years (1974 - 1999) totalled approximately 2629 tonnes, or 5.8 million pounds. Of this amount, 76.7% (2017 tonnes) has been harvested from the three primary stock complexes (Voisey, Nain, Okak) and illustrates the overall capacity of this area of the north coast to produce fish. There was no experimental in-river terminal harvest for Arctic charr in 1999 and the commercial Atlantic salmon fishery was closed for the second year. We note that the amount of charr harvested for food is unknown.

Résumé

Les statistiques sur les prises et l'effort de pêche de l'omble chevalier du nord du Labrador en 1999 sont résumées et des informations sur les prises et le poids selon l'âge ont été mises à jour de même que les données obtenues des étiquettes récupérées. Les débarquements de 40,5 tonnes étaient de 8,2 % plus élevés que ceux de l'année précédente et les plus élevés enregistrés depuis 1992. Dans l'ensemble, l'effort au cours des dernières années est encore faible comparativement aux années 80, et l'interprétation des taux actuels de capture commerciale, en tant qu'indice d'abondance des stocks pourrait être problématique. Les débarquements des ombles chevaliers anadromes de la région de pêche Nain au cours des 26 dernières années (1974 - 1999) totalisaient approximativement 2 629 tonnes (5,8 millions de livres). De cette quantité, 76,7 % (2 017 tonnes) ont été récoltées dans trois complexes de stocks principaux (Voisey, Nain, Okak) et cela montre la capacité de production globale de cette région de la côte nord. Aucune pêche expérimentale de l'omble chevalier n'a été réalisée en cours d'eau en 1999 et les pêches commerciales du saumon de l'Atlantique ont été fermées pour la deuxième année. Il est à noter que la quantité d'omble récoltée à des fins alimentaires est inconnue.

Introduction

Continuous records of commercial landings of anadromous Arctic charr (*Salvelinus alpinus*) from the northern Labrador coast are available since 1944. Catch statistics from the Nain and Makkovik Fishing Regions, and from subareas within the Nain Fishing Region (Fig. 1) exist since 1974 (Table 1). From 1977 to 1982 more than 200 t of Arctic charr were caught per year in northern Labrador. Landings declined during the mid-1980's as fewer individuals participated in the fishery. The lowest landings in the past 30 years occurred in 1996 (14.7 t) increasing to 37.5 t in 1998, but are still well below the long term average (1974 -1999 = 118 t).

Much of the decline in landings in the Nain Fishing Region during the previous decade can be directly attributed to a reduction in fishing effort. However, individual assessments of the Voisey and Nain stock units have indicated that stock sizes in the early 1990's were below levels estimated for the late 1970's and early 1980's (Dempson 1992, 1993, 1995). In recent years, there has been more emphasis by the Labrador Inuit Association (LIA) to develop in-river fisheries for Arctic charr in some of the northern fiord subareas. These fisheries could provide selective harvests on some charr stocks while at the same time providing an opportunity to obtain direct evidence of actual spawning escapements. In addition, the issuance of a communal licence at Nain has allowed new participants in the Arctic charr fishery.

This paper provides a summary of the catch information for the 1999 fishery in a format similar to that presented in previous years (Dempson and Shears 1999; Shears and Dempson 1996, 1997, 1998). We also update information on tag recaptures of Arctic charr in the context of consistency with past data that was used in the designation of individual stock complexes. Catch- and weight-at-age data for each of the Voisey, Nain, and Okak stock units based upon information collected during the 1999 fishery are also updated along with sex ratio information obtained from logbooks completed by commercial fishers. We note that there were no in-river terminal fisheries during 1998 nor 1999.

Methods

Information on commercial landings of Arctic charr from the Nain Fishing Region in 1999 was obtained through purchase slips prepared by Statistics and Informatics Branch of the Department of Fisheries and Oceans (DFO) and processed by the Salmonids Section. Information contained on the purchase slips included: name of the

fisherperson, licence number, area where the fish were caught, date, weight of fish landed, and number of fish caught. Landed gutted head-on catches were converted to round weight (in kilograms) using the conversion factor: gutted head-on weight x 1.22 = round weight (Dempson 1984). Catch per unit effort estimates in this document, expressed in terms of kilograms per person-week fished, follow the traditional values used in past reports and were derived from the method initiated by Coady and Best (1976). These unstandardized values are included for comparative purposes with past reports.

Information on length, weight and age (otolith) of Arctic charr caught in the commercial fishery was obtained as fish were processed at the Nain Fish Plant. As in previous years, a two-stage stratified sampling program was carried out for which specific details are provided in Dempson (1995). Samples were identified from individual subareas which form component parts of stock units (Dempson and Kristofferson 1987). Recent genetic analyses have supported the earlier designation of individual stock complexes in the north Labrador region but have also shown that there are often microgeographic genetic differences among local populations of charr in north Labrador (Bernatchez et al. 1998). Sex ratio data were obtained from logbooks maintained by selected commercial fisherpersons. Updated information on tag releases and recaptures of anadromous Arctic charr was compiled from ongoing tagging programs, the details of which were previously summarized by Dempson and Kristofferson (1987). Results are complete to 1999 and complement previous investigations. Tagging information also includes recapture data obtained from Arctic charr tagged and released by Jacques Whitford Environment Limited for the Voisey's Bay Nickel Company (JWEL 1997a, 1997b) from which tag recoveries were obtained, paid for, and processed by the Department of Fisheries and Oceans.

Results and Discussion

Tag recapture information

Tagging projects on Arctic charr in northern Labrador began in 1974 and have continued, in varying degrees, each year since. Results of earlier studies (prior to 1986) indicated that there was little intermixing of populations from widely distributed areas along the 300 km of coastline from Antons to Saglek Fiord (N_{Tagged} = 7566; $N_{Recaptured}$ = 1842) (Fig. 2), and that in some areas charr were found to interchange among local rivers (Dempson and Kristofferson 1987). At that time, only 1.3% of the charr tagged in the Voisey or Nain stock complexes were recaptured north of Black Island and less than 0.2% recaptured south of Antons. Similarly, less than 1% of the charr tagged in Okak, Hebron or Saglek subareas were recaptured south of the

Kiglapaits area. Generally, few fish were recaptured more than 100 km from their original release site.

To date, 13958 charr have been tagged and released in the north Labrador area with an additional 1190 tagged by the Voisey's Bay Nickel Company in 1996 and 1997 as part of the Environmental Impact Assessment related to the proposed Voisey's Bay Mine-Mill project (N_{Tagged} = 15148) (Table 2). By 1999, the number of tag recaptures ($N_{Recaptured}$) totalled 3486 with recovery rates of over 30% from the Nain stock complex. Current results are consistent with earlier investigations. Of those charr tagged and released in the Voisey stock complex area (N = 2555), 91% of the 533 tag recaptures were from within the same stock complex (Table 2). Similarly, of the charr tagged and released in the Nain stock complex (N = 7108), 93% of the 2234 tag recoveries were from the same area. With respect to the Okak stock complex, only 505 charr have been tagged and released, but 87% of the 136 tag recaptures were from the Okak unit.

Total northern Labrador Arctic charr landings - overview

Figure 3 illustrates the commercial landings of Arctic charr for all of northern Labrador from 1944 to 1999. Also included are the landings from the Nain and Makkovik Fishing Regions since 1974. During the past 26 years (1974 – 1999), the Nain Region has contributed 86% of the total northern Labrador catch of Arctic charr, averaging 101 t per year. Landings in 1999 totalled 40.5 t, an increase of 8.2% over the previous year, and was the highest catch recorded since 1992 (Table 1). Landings of anadromous Arctic charr from the Nain Fishing Region over the past 26 years (1974 - 1999) totalled approximately 2629 tonnes, or almost 5.8 million pounds. Of this amount, 77% (2017 tonnes) has been harvested from the three primary stock complexes (Voisey, Nain, Okak), and illustrates the overall capacity of this limited area of the north coast to produce fish. Besides Arctic charr, the Nain Fishing Region also harvested 429 tonnes, or about 946 thousand pounds of Atlantic salmon (*Salmo salar*) from 1977 to 1997. The commercial Atlantic salmon fishery, however, was closed beginning in 1998. Under an Aboriginal Arctic charr communal commercial fishing licence, there was only 243 kg of charr reported caught in the Canairktok Bay area of the Makkovik Fishing Region in 1999.

As noted in past assessments, the number of people charr fishing was relatively consistent from 1987 to 92 but dropped considerably in 1993. A further reduction by 50% occurred in 1994 as a result of the extension of the commercial salmon licence buy-out to north coast residents. As stated earlier, new entrants participating in the fishery have been restricted to fishing in those areas where the chance of intercepting Atlantic salmon is very small. Consequently, effort in 1998 and 1999 (in person-weeks) was greater than that during the 1994 – 1997 period.

Appendix 1 provides an updated summary of catch and effort statistics for all subareas within the Nain Fishing Region from 1974 to 1999 (experimental in-river harvests are not included in the Appendix - refer to Table 3 for past details). Some of these subareas form component parts of larger assessment units or stock complexes that were derived, as explained above, from results of tagging studies. The Nain Fishing Region is composed of three primary assessment units (Voisey, Nain, and Okak) in addition to other subareas, which are not currently considered as component parts of larger assessment units or stock complexes

With the reduction in commercial salmon and charr fishing licences in northern Labrador, there was a corresponding increase in food fishing licences. The number of food licences issued in 1998 was the highest in the time series.

No. of food licences

Community	1980	1982	1987	1993	1994	1995	1996	1997	1998
Postville	12	7	10	22	48	42	46	33	48
Makkovik	19	14	15	13	40	40	49	43	58
Hopedale	7	12	22	16	51	63	67	55	59
Davis Inlet	5	5	1	6	10	8	6	4	2
Nain	10	7	3	21	40	46	50	53	58
TOTAL	53	45	51	78	189	199	218	188	225

In 1999, 64 food licences were issued at Nain. In other communities, food fishing licences were apparently much reduced, having been replaced by a communal food fishery agreement with the LIA. Conditions of the licence agreement varied depending upon the community. As acknowledged in past reports, the amount of charr harvested for food is unknown.

Individual stock unit summaries

Voisey Stock Unit

The Voisey stock unit is made up of Voisey's Bay and the Anton's subareas (Fig. 1). Prior to 1994, annual landings ranged from 4 to 41 t (mean = 19t, 1974-93) and over this interval contributed 16% of the commercial catch of charr from the Nain Fishing Region (Table 4). The highest catches occurred during the late 1970's (Fig. 4) but landings fell coincident with decreased effort during the 1990's. In 1995 there was

no directed commercial fishery on this stock. Overall, 82% of the variation in catch can be explained simply by effort for the Voisey stock complex (Fig. 5). The Total Allowable Catches (TACs) listed in Table 4 for 1979 to 1984 applied only to the Voisey Bay subarea. A TAC of 14 t was maintained for 1999.

In 1999, landings increased to 8.0 tonnes, the highest catch from this stock unit since 1993 and contributed 20% of the landings from the Nain Fishing Region. Catch rates (CUE) also increased to the highest value since 1990 (Table 4). Timing of the fishery (median date of catch) in 1999 was about 5 days later than 1998 (Fig. 6). We note that over the past 25 years (1974 - 1999) about 405 tonnes of charr, or 892 thousand pounds of fish have been taken from the Voisey stock unit.

Catch- and weight-at-age data are summarized in Tables 5 and 6, respectively. Including the catch in 1999, more than 194 thousand charr have been harvested from the Voisey stock complex since 1977. Seven to nine year old charr, from the 1989 to 1991 year classes (year of spawning), contributed 77.6% of the catch in 1999 (Table 5). This high dependence on several age classes is consistent with information from past years. Overall mean weight of charr caught increase to the heaviest value observed since 1991, and the corresponding increase in individual weights-at-age (Table 6). A decline in mean weight of fish landed through to 1997 (Fig. 8) has been noted in past years. Sex ratio data from Arctic charr from the Voisey stock complex is provided in Table 7. Over 2000 fish were sexed in 1999 with female charr representing 52.2% of the sample. In total over all years for which there are data, 53% of the sampled catch were female (Table 7).

We note that there is no additional quantitative information to suggest changes to the management regime for 2000 owing to the lack of information on abundance of charr returning to Voisey's Bay rivers.

Nain Stock Unit

The Nain stock unit consists of an inshore zone made up of Anaktalik Bay, Nain Bay, Tikkoatokak Bay, and Webb Bay subareas, and an offshore island zone made up of the Dog Island and Black Island subareas (Fig. 1). Annual landings ranged from 5 to 76 t (mean = 38.0 t, 1974-99), and over this interval contributed 38% of the commercial catch of charr from the Nain Fishing Region (Table 8). The highest catches occurred during the late 1970's and early 1980's (Fig. 4), with the catches declining during the 1990's coincident with a reduction in effort. The lowest catch of approximately 5 t occurred in 1996. Overall, 87% of the variation in catch can be explained by effort directed in the Nain stock complex (Fig. 5).

The TACs listed in Table 8 for 1979 to 1983 applied to the specific subareas of Anaktalik Bay and Nain-Tikkoatokak Bay only. In 1984 and 1985, an offshore component was included in the TAC. The quota area catch (QAC) in Table 8 summarized landings for those subareas specifically under quota restrictions only, prior to the derivation of the stock units in 1986. Since 1986, the TAC has applied to the entire stock unit. Based partly on Science advice, the management plan for 1994 lowered the TAC from 47 t to 32 t. This TAC remained in effect for 1999.

Landings of Arctic charr from the Nain stock unit in 1999 totalled 10.8 t, a 25.7% decrease over the previous year (Table 8). This harvest represented 27% of the landings from the Nain Fishing Region in 1999. The increased catch was, in part, believed to be due to a reduction in effort over the previous year, by 34%. However, as noted for the Voisey stock unit, catch rates also increased to the highest recorded since 1989 within the Nain stock complex. Timing of the Nain unit fishery was about six days later than in 1998 (Fig. 6). We note that over the past 26 years (1974 - 1999) 989 tonnes, or about 2.2 million pounds of charr have been taken from the Nain stock unit (68.7% from the inshore zone).

A summary of landings partitioned by inshore and offshore fishing zones is presented in Table 9. Historically, the combination of effort reduction and a drop in reference level catches (TACs) have contributed to an overall decrease in the amount of charr harvested from this stock unit. During 1999, catch rate decreased in the offshore zone while increasing in the inshore zone.

As noted previously (Shears and Dempson 1998; Dempson and Shears 1999) there was a significant relationship between catch rate and timing of the fishery for the Nain stock unit ($r^2 = 0.37$; $P = 0.003$); the later the timing of the commercial catch, the lower the catch rate. However, if the inshore zone itself was considered, then 73% of the variation in catch-rate was explained by the timing of the fishery ($P = 0.0001$). In contrast with timing of the fishery in the Voisey and Okak stock units, timing of the Nain unit catch had been much later during the past decade (Fig. 6), especially when the inshore and offshore zones are considered separately (Fig. 7). In the absence of fish counting facilities, variability in run timing of charr to local rivers is unknown. Since larger charr are generally known to enter the rivers first, run timing can influence or confound the interpretation of changes in size of charr caught in the commercial fishery. The following table illustrates the mean lengths of charr sampled from each of the primary stock complexes for four in-season time periods:

Time Period	Mean length (mm)		
	Voisey	Nain	Okak
June 15 - July 15	532	531	522
July 16 - July 31	518	513	511
Aug 1 - Aug 15	513	501	505
Aug 16 - end	513	491	499

Catch- and weight-at-age data are summarized in Tables 10 and 11, respectively. Seven to nine year old charr, from the 1989 to 1991 year classes, contributed 77.9% of the catch in 1999 (Table 10). This high dependence on several age classes is consistent with information from past years. Including the catch in 1999, more than 510 thousand charr have been harvested from the Nain stock complex since 1977. Mean weight of charr increased substantially over that reported for 1998 to the highest recorded since 1991 (Table 11). As reported in earlier reports, there had been a trend for decline in mean weight of charr over time from this stock complex (Fig. 8). Recent investigations have shown that fluctuations about some of the trends in mean age and mean weight cannot be explained entirely as a result of exploitation and that variability in environmental factors may be partially responsible (Power et al. 2000). Sex ratio data from Arctic charr from the Nain stock complex is provided in Table 7. Over 1000 fish from the inshore zone were sexed in 1999 with female charr representing 47.8% of the sample. In total over all years for which there are data, 54.0% of the sampled catch from the inshore zone were female (Table 7). Similarly, over 2700 charr from the offshore zone were sexed in 1999, with females representing 44.9% of the sample. Over all years, 46.6% of fish sexed from the offshore zone were female (Table 7).

We note that there is no additional quantitative information to suggest changes to the management regime for 1999 owing to the lack of information on abundance of charr returning to rivers within the Nain stock complex. Concern, however, has been expressed regarding the abundance of charr at Nain Bay (Fraser River) and Anaktalik Bay in recent years.

Spring food fishery at Nain Bay

The Nain stock unit is where the principle domestic or spring food fishery occurs. This fishery is targeted on charr as they migrate to sea at the mouth of Fraser River (Nain Bay). Efforts in the past, both by DFO and by the Labrador Inuit Association (LIA), have failed to quantify adequately the amount of charr taken annually in this food

fishery. As noted in past assessments, this unrecorded harvest has not been factored into the commercial landings or catch-at-age estimates. There are continued concerns about the amount of charr taken from this area.

Okak Stock Unit

The Okak stock unit consists of an inshore zone made up of Okak Bay and an offshore island zone made up of the Cutthroat subarea (Fig. 1). Annual landings ranged from a low of 180 kg in 1992 to a high of 76 t in 1978 (mean = 24.0 t, 1974-99), and over this interval contributed 23% of the commercial catch of charr from the Nain Fishing Region (Table 12). The highest catches occurred during the late 1970's and early 1980's (Fig. 4), with the lowest catches in 1992 and 1993. Overall, 92% of the variation in catch can be explained by effort directed in the Okak stock complex (Fig. 4). The Total Allowable Catches (TACs) listed in Table 12 for 1981 to 1985 applied only to the Okak Bay subarea. The Cutthroat subarea has been identified as a region where there is a potential for high by-catches of Atlantic salmon, and consequently there has been limited fishing activity over the past two years. A TAC of 31 t was maintained for 1999.

Landings of Arctic charr from the Okak assessment unit have been inconsistent in recent years. No fishery occurred within Okak Bay itself in 1992 and 1993 while only 4 t was harvested in 1991. Landings rebounded during 1994 and 1995, with catches totalling 10.9 t and 10.6 t, respectively. Landings in 1997 were the highest recorded since 1990, but decreased again in 1998 and 1999 with landings of about 5 - 6 tonnes (Table 12). Over the past 25 years (1974 - 1999), 624 tonnes, or about 1.4 million pounds of charr, have been taken from the Okak stock unit (60.9% from the inshore subarea of Okak Bay). Inconsistency in landings could in part be due to effort directed toward other nearby subareas (e.g. Tasiuyak in 1997-99, and Napartok Bay in 1998 -1999) that do not formally form part of the three primary stock units (Voisey, Nain, Okak). The Tasiuyak and Napartok Bay subareas accounted for 14 tonnes, or 35% of the charr caught within the Nain Fishing Region during 1999, both with moderately high catch rates.

Similar to catch, catch rates have also been quite variable. Highest catch rates occurred in 1994 – 1996 but were followed by moderately low values since 1997 (Table 12). During 1999, catch rates were low in July, but during the two-week interval from August 6 to August 19, when 56% of the landings were obtained, catch rates were quite high (270 to 321 kg/person-week). Sporadic effort and variable timing of the fishery in the Okak stock unit (Fig. 6) could confound interpretation of catch rate statistics.

Catch- and weight-at-age data are summarized in Tables 13 and 14, respectively. Okak is similarly dominated by 7 to 9-year old charr, originating from the 1989 to 1991 year classes (year of spawning), and contributing 77.6% of the catch in 1999 (Table 13). Including the catch in 1999, more than 309 thousand charr have been harvested from the Okak stock complex since 1977. As observed in the other two stock complexes, mean weight of charr has again shown an increase over the past two years and in 1999, was the highest mean weight recorded since 1990, comparable with the long term mean weight of the catch from the Okak stock complex. As similarly noted for the other stock complexes, there had been a trend for a long term decline in mean weight of charr over time up through to 1997 (Table 14, Fig. 8). Sex ratio data from Arctic charr from the Okak stock complex is provided in Table 7, but also includes charr from the Tasiuyak and Kiglapaits subareas. Few charr, however, were sexed in 1999 (Table 7), but in total over all years for which there are data, 52.9% of the sampled catch were female (Table 7).

While there is no additional quantitative information on charr abundance in the Okak area, concerns regarding the status of the resource have been raised by local fishers. Some have recommended that Okak Bay should be closed for a period of years to allow stocks to rebuild. In the absence of a complete closure, consideration could be given to reducing the current total allowable catch of 31 t.

Summary

As stated in past reports, there are no independent estimates of Arctic charr abundance from any of the stock unit areas. With the minimal commercial effort in recent years, both in terms of spatial and temporal coverage, interpretation of catch-rates as an index of abundance is questionable. Commercial landings have been increasing since 1996, and unknown, but likely substantial amounts of charr were harvested in local food fisheries especially from within the Nain stock complex. Concerns have been raised by local fishers over the status of the resource at Okak Bay, Nain Bay (Fraser River) and Anaktalik Bay (N. Andersen, Nain, Labrador, pers. comm). River-specific information on Arctic charr abundance and monitoring of stock characteristics are imperative in order to provide sound scientific advice. In the absence of these types of data, only qualitative information related to stock status can be provided along with updates of baseline biological characteristics information derived from sampling the commercial fishery.

Nain Region - Atlantic salmon landings

As specified earlier, the commercial Atlantic salmon fishery was closed in 1998. As reported by the DFO Fisheries Officer (N. Andersen, Nain, Labrador) few salmon were caught as by-catch during 1999. A summary of past commercial salmon landings up to 1997 is provided in Table 15.

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Table 1. Summary of northern Labrador Arctic charr landings (kg round) by fishing Region, 1974-1999.

Year	Nain Fishing Region				Makkovik Fishing Region			Total Catch
	Catch	No. of Fisherpersons	Fathoms of Gear Licenced	Catch as % of Total	Catch	No. of Fisherpersons	Fathoms of Gear Licenced	
1974	120414	66		81	28133			148547
1975	44118	85		82	9542			53660
1976	134898	101		90	15645			150543
1977	186165	128		88	24205			210370
1978	213915	131	21340	86	34387	149	29300	248302
1979	175263	142	21320	82	37693	110	21225	212956
1980	167991	128	23960	83	35561	154	30635	203552
1981	231221	122	21700	92	20733	154	30990	251954
1982	203012	118	23600	84	39163	141	28200	242175
1983	149732	119	24400	84	29100	148	29600	178832
1984	123045	115	23000	83	24792	147	29400	147837
1985	107120	95	19000	76	33945	132	26400	141065
1986	99963	79	15800	88	13888	109	21800	113851
1987	97379	72	14400	91	9965	130	26000	107344
1988	74010	63	12600	83	14819	120	24000	88829
1989	85970	72	14400	85	14808	126	25200	100778
1990	86292	67	13400	86	13509	103	20600	99801
1991	54614	65	13000	78	15137	96	19200	69751
1992	60754	62	12400	82	13044	96	19200	73798
1993	33562	37	7200	88	4622	90	18000	38184
1994	29345	18	3600	94	1778	18	3600	31123
1995	25080	18	3600	85	4522	18	3600	29602
1996	13281	18	3600	83	2691	19	3800	15972
1997	33985	30	6000	89	4029	10	2000	38014
1998	37458	35	7000	100	0	0	0	37458
1999	40271	34	6800	99	243			40514
Avg. 1994-98	27830				2604			30434
Avg. 1989-98	46034				7414			53448
Avg. 1974-99	101110			86	17152			118262
Total	2628858				445954			3074812

For 1985, Makkovik Region, catch includes 6788 kg from spring fishery in Postville area. Catch for Nain Fishing Region includes in-river harvests in 1989,1991,1992, 1994, 1995, 1996 and 1997, and the trap fishery at Nachvak Fiord in 1986.

Table 2. Percentage distribution of recoveries, by stock complex and subarea, of anadromous Arctic char tagged and released from various subareas and rivers of northern Labrador, 1974-1999. Rounding of percentages may result in some values exceeding 100%.

Tagging location, stock complex, & subarea	Number Tagged	Number Recaptured	Percent recapture by stock complex												
			Voisey			Nain			Okak			Napartok	Hebron	Saglek	Unknown
			Inshore	Offshore	Total	Inshore	Offshore	Total	Inshore	Offshore	Total				
Voisey															
Antons	80	9	22	22	44	34	22	56	0	0	0	0	0	0	0
Voisey's Bay	2475	524	83	8	91	4	8	11	0	<1	<1	0	0	0	<1
Total	2555	533*	82	9	91	5	4	9	0	<1	<1	0	0	0	<1
* Includes one at Davis Inlet and one at Hopedale															
Nain															
Anaktalik Bay	290	75	0	4	4	69	19	88	0	3	3	0	0	0	5
Nain Bay	3012	786	1	3	4	65	28	93	<1	1	1	0	0	0	1
Fraser River	807	243	0	1	1	84	10	94	0	1	1	0	0	0	4
Tikkoatokak Bay	2228	907	1	3	4	64	29	93	<1	2	2	0	0	0	1
Webb Bay	312	144	0	0	0	94	5	99	0	<1	<1	0	0	0	0
Offshore	459	79	1	1	2	18	71	89	0	4	4	0	0	0	5
Total	7108	2234*	1	2	3	67	26	93	<1	1	2	0	0	0	2
* Includes one at Makkovik and one at Davis Inlet															
Okak															
Okak Bay	505	136	0	0	0	2	4	6	44	43	87	0	0	0	7
Napartok															
Napartok Bay	228	15	0	0	0	7	0	7	0	20	20	47	27		0
Hebron															
Hebron Fiord	411	66	0	0	0	0	0	0	3	6	9	2	85	1	3
Ikarut River - adults	1245	289	0	0	0	0	<1	<1	2	3	5	1	92	<1	<1
Ikarut River - juveniles	1253	57	0	0	0	0	0	0	0	0	0	0	100	0	0
River H-3	420	38	0	0	0	5	3	8	0	10	10	0	82	0	0
River H-6	106	15	0	0	0	0	7	7	0	7	7	0	86	0	0
Total	3435	465	0	0	0	<1	1	1	2	4	6	1	91	<1	1
Saglek															
Saglek Fiord	342	37	0	0	0	0	0	0	0	0	0	0	8	92	0
Pangertok Inlet	163	8	0	0	0	0	0	0	0	0	0	12	0	88	0
Southwest Arm Bk.	683	50	0	0	0	0	0	0	0	0	0	0	0	100	0
North Arm Bk.	129	8	0	0	0	0	0	0	0	0	0	0	0	100	0
Total	1317	103	0	0	0	0	0	0	0	0	0	1	3	96	0

Table 3. Summary of Arctic charr landings (kg-round) from various experimental fisheries in northern Labrador.

Year	Area	Type of Fishery		
		Trap-net	River Gillnet	In-river Trap
1986	Nachvak Fiord	1777		
1989	Voisey Bay		169	
	Nain Bay		345	
	Tikkoatokak Bay		473	
	Webb Bay		146	
1991	Saglek Fiord			159
1992	Saglek Fiord			2201
1994	Saglek Fiord			2114
1995	Saglek Fiord			2584
1996	Saglek Fiord			2983
1997	Saglek Fiord			4123

* Note these catches are included in the overall summary in Table 1 but are not included in Appendix 1.

Biological characteristic data collected from commercial sized Arctic charr obtained from various in-river fisheries in northern Labrador

Year	Rivers	Number	Mean FL (cm)	Mean GW (kg)	Mean Age (y)
1989	Ikadlivik Brook, Voisey Bay	98	51.1	1.45	9.2
1989	Webb Brook, Webb Bay	102	47.6	1.19	9.5
1989	Kingurutik River, Tikkoatokak Bay	300	47.6	1.16	9.0
1989	Kamanatsuk Brook, Tikkoatokak Bay	40	47.6	1.02	9.4
1989	Fraser River, Nain Bay	287	45.4	1.02	10.0
1991	Pangertok Inlet River, Saglek	77	53.1	1.55	9.8
1994	Pangertok Inlet River, Saglek	89	53.6	1.53	9.7
1992	Southwest Arm Brook, Saglek	210	52.5	1.35	9.6
1994	Southwest Arm Brook, Saglek	151	52.4	1.41	9.3
1995	Southwest Arm Brook, Saglek	187	52.2	1.49	9.4
1996	Southwest Arm Brook, Saglek*	193	51.9	1.38	10.4
1997	Southwest Arm Brook, Saglek	113	51.3	1.29	10.1
1994	North Arm Brook, Saglek	99	50.0	1.16	10.4

* only 77 fish with ages

Table 4. Catch (kg-round) and effort (person-weeks) statistics for the Voisey assessment unit from 1974 to 1999. Quota area catch (QAC) refers to the landings from those subareas specifically under TAC regulation only, prior to the derivation of assessment units in 1985. CUE is unstandardized.

Year	TAC	QAC	Catch	Effort	CUE	% Offshore	Unit as % of Nain Region Total
1974			29180			31	24
1975			3727			94	8
1976			14652	57	257	21	11
1977			24108	75	321	9	13
1978			36991	102	363	11	17
1979	22500	21880	40590	116	350	47	23
1980	22500	11557	19694	82	240	42	12
1981	16100	16325	23810	90	265	33	10
1982		2688	13309	60	222	45	7
1983	16100	2953	25593	80	320	89	17
1984	16100	8133	20873	101	207	62	17
1985	23400		15648	57	275	91	15
1986	23400		16655	82	203	82	17
1987	17000		21242	101	210	41	22
1988	17000		14037	52	270	60	19
1989	17000		11019	32	344	100	13
1990	17000		19895	69	288	64	23
1991	17000		10971	60	183	26	20
1992	14000		9284	39	238	96	15
1993	14000		8461	48	176	23	25
1994	14000		3335	15	222	5	11
1995	14000		0	0	0	0	0
1996	14000		977	6	163	0	7
1997	14000		4860	30	162	85	14
1998	14000		7722	31	249	44	21
1999	14000		8006	31	258	35	20
Avg. 1994-98			3379	16	159	27	11
Avg. 1989-98			7652	33	203	44	15
Avg. 1974-99			15563	59	241	48	15
Total			404639				

TAC applied only to Voisey Bay subarea from 1979 to 1984.

Table 5. Estimated catch- and percent-at-age from the commercial Arctic char fishery in the Volsey stock unit, 1977-1999.

CATCH - AT - AGE

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
6	318	619	475	154	68	316	1045	291	1	44	8	140	68	17	9	364	494	188		31	458	288	80
7	2085	4374	4914	803	915	755	2947	2891	1917	351	1312	1638	911	1110	909	1196	2088	602		208	1233	1338	1262
8	4030	5372	7928	3388	2571	1586	3410	3254	3066	3230	2813	2319	1445	2865	1047	1034	1344	647		190	962	1427	1564
9	2088	2330	3382	4140	4803	2346	3449	2238	3242	3888	4420	1486	1520	2945	1625	1511	1025	487		53	618	972	1025
10	1237	1236	1163	1424	2359	1228	1611	1382	433	1400	2029	1440	1135	1827	1257	1099	574	374		111	316	569	463
11	600	1141	634	500	941	657	1084	753	324	666	966	771	702	1083	691	480	237	99		11	113	189	234
12	389	380	212	238	406	65	627	414	233	244	280	289	245	588	362	241	98	22		52	33	46	105
13	212	380	159	159	41	13	147	355	64	149	38	28	107	440	155	30	10	5		0	3	9	22
14	108	334	55	28	19	27	45	83	55	123	57	43	183	136	89	5	8	5		0	12	0	
6+	11085	16166	19922	10832	12123	6971	14585	11671	9335	10615	11823	8133	6316	11011	6144	5973	5988	2429	No Fishery	656	3748	4838	4755

PERCENT - AT - AGE

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
6	2.9	3.8	2.5	1.4	0.6	4.5	7.2	2.5	0.0	0.4	0.1	1.7	1.1	0.2	0.1	6.1	8.4	7.7		4.7	12.2	6.0	1.7
7	18.8	27.1	26.0	7.4	7.5	10.8	20.2	24.8	20.5	3.3	11.0	20.1	14.4	10.1	14.8	20.1	35.4	24.8		31.7	32.9	27.7	26.1
8	36.4	33.2	41.9	31.3	21.2	22.5	23.4	27.9	32.8	30.4	23.8	28.5	22.9	26.0	17.0	17.3	22.8	26.6		29.0	25.7	29.5	32.3
9	18.9	14.4	17.9	38.2	39.6	33.7	23.7	19.2	34.7	36.6	37.1	18.0	24.1	26.7	26.4	25.3	17.4	20.0		8.1	16.5	20.1	21.2
10	11.2	7.6	6.1	13.1	19.5	17.6	11.1	11.9	4.6	13.2	17.0	17.7	18.0	16.6	20.5	18.4	9.7	15.4		16.9	8.4	11.8	9.6
11	5.4	7.1	3.4	4.6	7.8	9.4	7.4	6.5	3.5	6.5	8.1	9.5	11.1	9.8	11.2	8.0	4.0	4.1		1.7	3.0	3.9	4.8
12	3.5	2.4	1.1	2.2	3.3	0.9	5.7	3.5	2.5	2.3	2.3	3.6	3.9	5.3	5.9	4.0	1.7	0.9		7.9	0.9	1.0	2.2
13	1.9	2.4	0.8	1.5	0.3	0.2	1.0	3.0	0.7	1.4	0.3	0.3	1.7	4.0	2.5	0.5	0.2	0.2		0.0	0.1	0.2	0.5
14	1.0	2.1	0.3	0.3	0.2	0.4	0.3	0.7	0.6	1.2	0.5	0.5	2.9	1.2	1.4	0.1	0.1	0.2		0.0	0.3	0.0	0.0

Table 6. Average weight-at-age (kg-round) from the Voisey stock unit commercial catch of Arctic charr, 1977-1999.

AVERAGE WEIGHT - AT - AGE

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
6	1.53	1.53	1.53	1.03	0.93	1.20	1.33	1.25	1.05	1.07	1.03	1.23	1.27	1.12	1.11	1.17	0.98	0.88	-	0.82	0.81	1.03	1.17
7	1.77	1.77	1.77	1.24	1.26	1.46	1.54	1.53	1.39	1.21	1.41	1.50	1.43	1.48	1.47	1.32	1.30	1.19	-	1.37	1.14	1.35	1.43
8	2.07	2.07	2.07	1.60	1.77	1.70	1.64	1.71	1.63	1.44	1.73	1.69	1.68	1.70	1.64	1.44	1.50	1.39	-	1.42	1.44	1.66	1.68
9	2.60	2.60	2.60	1.89	2.04	2.02	1.89	1.93	1.77	1.64	1.80	1.78	1.79	1.83	1.79	1.62	1.58	1.50	-	1.80	1.59	1.81	1.85
10	2.78	2.78	2.78	2.19	2.17	2.20	2.04	2.06	1.98	1.72	1.95	1.89	1.95	1.94	1.84	1.70	1.73	1.58	-	1.58	1.66	1.97	1.90
11	2.94	2.94	2.94	2.42	2.30	2.49	2.18	2.14	1.99	1.90	2.02	1.96	2.06	2.01	2.01	1.90	1.85	1.72	-	1.95	1.63	1.78	2.07
12	3.24	3.24	3.24	2.49	2.37	2.33	2.10	2.32	2.18	1.90	1.92	1.88	1.90	1.98	2.01	1.97	1.92	2.41	-	1.84	1.71	1.80	1.88
13	2.60	2.60	2.60	2.70	3.36	2.83	2.20	1.91	2.26	1.97	2.31	2.23	2.04	1.90	2.01	2.51	2.74	2.55	-	-	2.64	0.85	1.80
14	2.76	2.76	2.76	3.73	2.76	3.42	2.55	1.82	2.26	1.45	1.58	1.45	1.90	2.29	2.15	0.00	2.59	2.20	-	-	2.19	-	-

MEAN AGE OF INDIVIDUALS IN CATCH

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	8.62	8.50	8.20	8.66	9.09	8.84	8.63	8.66	8.51	8.97	8.98	8.77	9.18	9.28	9.31	8.70	8.01	8.29	-	8.38	7.91	8.21	8.37

MEAN WEIGHT OF INDIVIDUALS IN CATCH

Weight	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	2.28	2.21	2.17	1.83	1.98	1.94	1.78	1.79	1.68	1.58	1.79	1.73	1.78	1.81	1.77	1.57	1.32	1.39	-	1.49	1.30	1.60	1.68

Table 7. Summary of sex ratio data for Arctic charr sampled from the Voisey, Nain, and Okak stock complexes in north Labrador. Information was obtained from commercial logbooks completed by local fishers, 1979, 1982-1999.

	Voisey Stock Complex			Nain Stock Complex						Okak Stock Complex *		
				Nain Inshore Zone			Nain Offshore Zone					
Year	No. of Males	No. of Females	% Female	No. of Males	No. of Females	% Female	No. of Males	No. of Females	% Female	No. of Males	No. of Females	% Female
1979				930	979	51.3						
1982				1367	2353	63.3						
1983				2427	3979	62.1	757	431	36.3	606	954	61.2
1984	985	1070	52.1	910	1300	58.8	397	401	50.3	311	371	54.4
1985	2064	2277	52.5	1020	932	47.7	591	500	45.8	1569	1751	52.7
1986	2640	3227	55.0	2061	2533	55.1	706	564	44.4			
1987	2189	2961	57.5	3911	4294	52.3	35	28	44.4	476	638	57.3
1988	3468	3328	49.0	1280	1240	49.2				172	132	43.4
1989	2255	2158	48.9	3207	3784	54.1	61	23	27.4	733	726	49.8
1990	2834	3511	55.3	2884	3342	53.7	582	515	46.9	761	862	53.1
1991				979	887	47.5				486	564	53.7
1992	88	133	60.2	1468	1631	52.6	368	512	58.2	871	876	50.1
1993	131	175	57.2	551	509	48.0	327	237	42.0	544	477	46.7
1994				797	872	52.2	602	482	44.5			
1995				179	63	26.0	1355	1448	51.7			
1996	52	54	50.9	162	165	50.5	653	578	47.0			
1997	763	810	51.5	512	579	53.1	1055	913	46.4			
1998	842	1014	54.6	983	786	44.4	1447	1252	46.4			
1999	981	1073	52.2	587	520	47.8	1537	1252	44.9	68	44	39.3
Total	19292	21791	53.0	26195	30748	54.0	10473	9136	46.6	6597	7395	52.9

* Okak Stock Complex sex ratio data also includes the Tasiuyak and Kiglapaits subareas. In some years, total numbers of male and female charr exceed that shown for Okak catch-at-age which includes only the Okak Bay and Cutthroat subareas.

Table 8. Catch (kg) and effort (person-weeks) statistics for the Nain assessment unit from 1974 to 1999. Quota area catch (QAC) refers to the landings from those subareas specifically under TAC regulation only, prior to the derivation of assessment units in 1986. CUE is unstandardized.

Year	TAC	QAC	Catch	Effort	CUE	% Offshore	Unit as % of Nain Region Total
1974			37745			18	31
1975			33830			8	77
1976			53313	196	272	5	40
1977			76255	291	262	7	41
1978			73783	314	235	4	34
1979	61000	52832	66844	336	199	18	38
1980	61000	50176	75055	390	192	30	45
1981	37160	37223	65832	278	236	24	28
1982	43600	39119	55617	235	237	22	27
1983	51000	19102	51202	289	177	34	34
1984	43200	29063	38900	244	159	37	32
1985	30500	38019	41158	252	163	48	38
1986	43000		37095	185	201	56	37
1987	47000		45872	200	229	61	47
1988	47000		38295	229	167	62	52
1989	47000		51485	183	281	41	61
1990	47000		45275	188	241	62	52
1991	47000		15892	149	107	10	29
1992	47000		19555	131	149	46	32
1993	47000		13410	116	116	58	40
1994	32000		8825	69	128	48	30
1995	32000		6835	41	167	88	27
1996	32000		4851	53	92	52	37
1997	32000		7024	42	167	53	21
1998	32000		14602	77	190	57	39
1999	32000		10848	44	247	46	27
Avg. 1994-98			8427	56	149	60	31
Avg. 1989-98			18773	105	164	51	37
Avg. 1974-99			38045	189	192	38	38
Total			989158				

TAC applied only to Anaktalik Bay and Tikkoatokak Bay from 1979 to 1983 (1983 also includes 5 t for Nain Bay) but includes an offshore component from 1984 to 1985.

Table 9. Summary of catch and effort statistics for the Nain stock unit, 1974 - 1999. Quotas and landings are in kg round weight, effort is expressed as person-weeks fished. Refer to text for information on quotas and quota area catch. CUE = unstandardized catch per unit effort.

	Inshore			Offshore				Total				
Year	Catch	Effort	CUE	Catch	Effort	CUE	% Catch Offshore	Catch	Effort*	CUE	TAC	Quota Area Catch
1974	30822			6923			18.1	37745				
1975	31076			2754			8.1	33830				
1976	50813	146	348	2500	52	48	4.7	53313	196	272		
1977	70908	183	387	5347	114	47	7	76255	291	262		
1978	70465	212	332	3298	106	31	4.5	73763	314	235		
1979	54967	189	291	11877	152	78	17.8	66844	336	199	61000	52832
1980	52328	183	286	22727	215	106	30.3	75055	390	192	61000	50176
1981	49956	157	318	15676	131	120	23.9	65632	278	236	37160	37223
1982	43106	119	362	12509	117	107	22.2	55617	235	237	43660	39119
1983	33603	147	229	17599	149	118	34.4	51202	289	177	51000	19102
1984	24558	131	187	14342	128	112	36.9	38900	244	159	43200	29063
1985	21527	125	172	19631	130	151	47.7	41158	252	163	30500	36019
1986	16347	91	180	20748	101	205	55.9	37095	185	201	43000	
1987	17840	71	251	28032	135	208	61.1	45872	200	229	47000	
1988	14535	90	162	23759	149	159	62.1	38295	229	167	47000	
1989	30449	103	296	21016	87	242	40.8	51465	183	281	47000	
1990	17069	88	194	28205	108	261	62.3	45275	188	241	47000	
1991	10162	102	100	5730	50	115	36.1	15892	149	107	47000	
1992	10504	71	148	9051	60	151	46.3	19555	131	149	47000	
1993	5591	60	93	7819	59	133	58.3	13410	116	116	47000	
1994	4592	31	148	4232	38	111	48	8825	69	128	32000	
1995	844	11	77	5991	33	182	88	6835	41	167	32000	
1996	2306	11	72	2545	21	121	52	4851	53	92	32000	
1997	3317	20	166	3707	23	161	53	7024	42	167	32000	
1998	6244	44	142	8358	34	246	57	14602	77	190	32000	
1999	5824	22	265	5024	25	201	46	10848	44	247	32000	

* Total effort should be equal to or less than the sum of the inshore and offshore effort.

Table 10. Estimated catch- and percent-at-age from the commercial Arctic charr fishery in the Nain stock unit, 1977-99.

CATCH - AT - AGE

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
6	2003	371	430	75	145	83	470	182	103	210	483	204	903	459	203	269	83	92	197	30	348	490	216
7	9250	6703	4306	980	2118	977	2791	2612	2463	4129	5462	6288	4750	4726	1365	3195	1982	999	1040	474	1267	3274	2347
8	12453	13122	11568	10519	6877	4782	5842	4619	6506	7713	6293	7166	9707	6115	2085	3809	2874	2087	1294	944	795	2552	2023
9	7630	7984	9593	16342	15435	7255	6996	5671	4722	5862	7548	4688	8464	8844	2631	3166	2525	1628	1539	1072	1700	1847	1238
10	5052	4406	4208	8345	9787	7987	4177	4374	4111	2857	4498	3607	3785	4681	2175	2574	1596	859	426	454	747	931	609
11	2454	2367	2168	4077	3746	4936	4357	2173	2494	1284	2013	1631	2853	1908	874	905	469	282	201	241	343	767	460
12	988	1688	1573	1340	991	2976	2762	1495	1605	625	1375	650	1234	927	444	422	296	94	25	52	138	195	242
13	358	312	418	813	304	561	600	738	901	240	898	324	685	378	183	241	171	39	0	49	64	106	53
14	180	272	312	522	151	451	557	281	534	199	306	136	277	137	92	48	49	20	5	0	26	42	0
15	1	118	34	43	42	59	70	96	322	205	357	52	28	186	48	32	38	24	0	0	0	0	10
16	1	97	14	1	13	46	27	57	93	50	180	20	6	1	36	1	0	3	0	0	0	0	0
17	1	1	1	66	10	23	95	89	21	42	37	40	1	1	2	1	2	0	0	0	0	0	0
6+	40371	37441	34625	43103	39619	30136	28744	22387	23875	23416	29450	24806	32673	28363	10138	14663	10085	6127	4727	3316	5428	10204	7208

PERCENT - AT - AGE

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
6	5.0	1.0	1.2	0.2	0.4	0.3	1.6	0.8	0.4	0.9	1.6	0.8	2.8	1.6	2.0	1.8	0.8	1.5	4.2	0.9	6.4	4.8	3.0
7	22.9	17.9	12.4	2.2	5.3	3.2	9.7	11.7	10.3	17.6	18.5	25.3	14.5	16.7	13.5	21.8	19.7	16.3	22.0	14.3	23.3	32.1	32.6
8	30.8	35.0	33.4	24.4	17.4	15.9	20.3	20.6	27.3	32.9	21.4	28.9	29.7	21.6	20.6	26.0	28.5	34.1	27.4	28.5	14.6	25.0	28.1
9	18.9	21.3	27.7	37.9	39.0	24.1	24.3	25.3	19.8	25.0	25.6	18.9	25.9	31.2	26.0	21.6	25.0	26.6	32.6	32.3	31.3	18.1	17.2
10	12.5	11.8	12.2	19.4	24.7	26.5	14.5	19.5	17.2	12.2	15.3	14.5	11.6	16.5	21.5	17.6	15.8	14.0	9.0	13.7	13.8	9.1	8.4
11	6.1	6.3	6.3	9.5	9.5	16.4	15.2	9.7	10.4	5.5	6.8	6.6	8.7	6.7	8.6	6.2	4.7	4.6	4.3	7.3	6.3	7.5	6.4
12	2.4	4.5	4.5	3.1	2.5	9.9	9.6	6.7	6.7	2.7	4.7	2.6	3.8	3.3	4.4	2.9	2.9	1.5	0.5	1.6	2.5	1.9	3.4
13	0.9	0.8	1.2	1.9	0.8	1.9	2.1	3.3	3.8	1.0	3.0	1.3	2.0	1.3	1.8	1.6	1.7	0.6	0.0	1.5	1.2	1.0	0.9
14	0.4	0.7	0.9	1.2	0.4	1.5	1.9	1.3	2.2	0.8	1.0	0.5	0.8	0.5	0.9	0.3	0.5	0.3	0.1	0.0	0.5	0.4	0.0
15	0.0	0.3	0.1	0.1	0.1	0.2	0.2	0.4	1.3	0.9	1.2	0.2	0.1	0.7	0.5	0.2	0.4	0.4	0.0	0.0	0.0	0.0	0.1
16	0.0	0.3	0.0	0.0	0.0	0.2	0.1	0.3	0.4	0.2	0.6	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.2	0.0	0.1	0.3	0.4	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 11. Average weight-at-age (kg-round) from the Nain stock unit commercial catch of Arctic charr, 1977-99.

AVERAGE WEIGHT - AT - AGE

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
6	0.89	1.31	1.37	0.89	0.79	1.13	1.27	1.18	1.10	1.15	1.14	1.13	1.16	1.17	1.29	0.94	0.80	0.96	1.14	0.88	0.78	1.04	1.22
7	1.26	1.71	1.52	1.20	1.16	1.37	1.56	1.40	1.43	1.37	1.33	1.38	1.38	1.42	1.38	1.20	1.16	1.25	1.29	1.27	1.16	1.33	1.37
8	1.77	1.86	1.85	1.52	1.51	1.88	1.86	1.83	1.65	1.56	1.53	1.55	1.56	1.50	1.54	1.33	1.31	1.44	1.46	1.44	1.30	1.43	1.54
9	2.07	2.24	2.02	1.78	1.70	1.84	1.84	1.78	1.78	1.69	1.62	1.63	1.63	1.66	1.59	1.37	1.38	1.51	1.50	1.53	1.40	1.53	1.62
10	2.59	2.41	2.08	1.93	1.78	1.89	1.88	1.86	1.83	1.69	1.65	1.64	1.71	1.78	1.63	1.41	1.42	1.58	1.62	1.53	1.49	1.59	1.66
11	2.86	2.35	2.16	1.83	1.78	1.93	1.88	1.87	1.81	1.68	1.68	1.67	1.68	1.68	1.71	1.54	1.50	1.47	1.88	1.57	1.48	1.67	1.55
12	2.74	2.67	2.41	1.91	1.80	1.96	1.92	1.89	1.83	1.70	1.71	1.71	1.84	1.77	1.70	1.44	1.52	1.55	1.97	1.75	1.63	1.80	1.66
13	3.16	3.34	2.25	1.93	1.74	2.11	1.96	1.93	1.82	1.95	1.68	1.70	1.69	1.65	1.76	1.49	1.38	1.86	-	1.46	1.47	1.76	2.11
14	3.28	2.88	1.94	1.97	1.72	1.93	1.77	2.07	1.90	1.79	1.74	1.44	1.74	1.75	1.65	1.52	1.24	1.75	2.89	-	1.49	1.60	-
15	2.65	2.65	2.65	2.71	2.67	2.26	1.84	1.84	1.68	1.61	1.60	1.68	1.97	1.48	1.86	1.93	1.46	1.52	-	-	-	-	2.05
16	2.15	2.15	2.15	2.15	3.88	2.69	2.05	1.46	1.53	1.71	1.61	1.75	2.56	1.97	1.47	1.87	0.00	2.20	-	-	-	-	-
17	2.45	2.45	2.45	4.43	2.45	2.69	2.28	1.91	1.64	1.64	2.03	1.75	1.64	1.81	4.65	2.38	3.63	0.00	-	-	-	-	-

MEAN AGE OF INDIVIDUALS IN CATCH

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	8.46	8.75	8.87	9.34	9.28	9.83	9.52	9.40	9.47	8.77	9.10	8.65	8.86	8.92	9.16	8.73	8.75	8.64	8.38	8.79	8.61	8.33	8.33

Inshore and Offshore

MEAN WEIGHT OF INDIVIDUALS IN CATCH

Weight	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	1.88	2.08	1.93	1.75	1.68	1.85	1.79	1.74	1.73	1.59	1.56	1.55	1.58	1.60	1.57	1.34	1.33	1.44	1.45	1.48	1.29	1.43	1.51

Inshore

MEAN WEIGHT OF INDIVIDUALS IN CATCH

Weight	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
				1.74	1.66	1.82	1.84	1.84	1.82	1.59	1.58	1.57	1.55	1.58	1.58	1.26	1.29	1.38	1.3	1.29	1.61	1.45	1.47

Offshore

MEAN WEIGHT OF INDIVIDUALS IN CATCH

Weight	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
						1.85	1.80	1.67	1.59	1.53	1.48	1.54	1.54	1.63	1.58	1.34	1.34	1.53	1.43	1.52	1.24	1.42	1.57

Table 12. Catch (kg) and effort (person-weeks) statistics for the Okak assessment unit from 1974 to 1999. Quota area catch (QAC) refers to the landings from those subareas specifically under TAC regulation only, prior to the derivation of assessment units in 1986. CUE is unstandardized.

Year	TAC	QAC	Catch	Effort	CUE	% Offshore	Unit as % of Nain Region Total
1974			46891			27	39
1975			5057			53	11
1976			25338	148	171	30	19
1977			42392	243	174	37	23
1978			76024	352	216	54	36
1979			43261	283	153	41	25
1980			49035	253	194	66	29
1981	27300	11049	47541	202	235	78	21
1982	27300	9031	34171	186	184	75	17
1983	21000	30732	48978	286	171	39	33
1984	27000	13864	18148	94	193	25	15
1985	27000	24746	33261	208	160	26	31
1986	42000		28896	172	168	30	29
1987	43000		19649	134	147	20	20
1988	31000		17450	136	128	28	24
1989	31000		16563	163	102	10	20
1990	31000		16125	100	161	22	19
1991	31000		4432	31	143	7	8
1992	31000		180	13	14	100	<1
1993	31000		578	9	64	100	2
1994	31000		10866	23	472	0	37
1995	31000		10635	26	409	2	42
1996	31000		3425	8	428	2	26
1997	31000		13515	69	196	7	40
1998	31000		5997	43	139	0	16
1999	31000		5232	35	149	0	13
Avg. 1994-98			8888	34	329	2	32
Avg. 1989-98			8232	49	213	25	21
Avg. 1974-99			23986	134	190	34	23
Total			623638				

Table 13. Estimated catch- and percent at-age from the commercial Arctic charr fishery in the Okak stock unit, 1977-1999.

CATCH - AT - AGE

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
6	84	205	1	130	39	93	475	220	17	41	42	150	190	80	22	0	9	113	260	37	494	426	24
7	139	2465	1989	638	526	713	1782	1202	2675	2056	1008	1007	1760	1474	577	3	99	1059	998	327	1276	1144	771
8	417	8163	7462	5631	2135	2760	4471	2047	4948	6333	1636	1822	1829	2667	778	18	120	1972	2123	560	1289	1164	715
9	1084	5494	4997	9175	7188	4167	5787	1885	5385	5197	3686	2977	2058	2108	693	31	122	1817	2556	661	1337	1042	970
10	2667	5594	3299	6487	7615	3848	5601	1621	2740	3291	3247	2241	1718	1287	332	26	62	985	1245	437	1068	344	349
11	3388	3747	1954	2863	4873	3622	5169	1937	2936	1261	1371	1492	1714	1234	164	11	6	655	459	184	509	217	269
12	5417	3953	878	1382	1330	1542	4075	1290	987	875	395	772	865	556	122	18	10	174	151	64	60	50	53
13	2278	2773	781	407	1044	444	1643	1034	740	562	299	187	296	261	68	7	0	43	55	13	94	27	15
14	1694	514	527	350	459	342	658	514	768	148	166	125	139	94	23	0	0	0	2	0	0	5	0
15	1472	1027	410	262	359	183	307	192	103	170	85	13	52	92	0	0	0	7	0	0	0	0	0
16	832	308	351	90	44	57	107	111	75	8	34	32	56	0	23	0	0	0	0	0	0	0	0
17	277	567	399	178	223	114	66	123	123	3	2	1	16	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0	0	0	0	0	0	0	0	0
6+	19749	34810	23028	27593	25613	17885	30123	12176	21497	19945	11971	10819	10700	9656	2802	114	428	6825	7849	2283	6127	4419	3166

PERCENT - AT - AGE

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
6	0.4	0.6	0.0	0.5	0.2	0.5	1.6	1.8	0.1	0.2	0.4	1.4	1.8	0.8	0.8	0.0	2.1	1.7	3.3	1.6	8.1	9.6	0.8
7	0.7	7.1	8.6	2.3	2.1	4.0	5.8	9.9	12.4	10.3	8.4	9.3	16.4	15.0	20.6	2.6	23.1	15.5	12.7	14.3	20.8	25.9	24.4
8	2.1	23.5	32.4	20.4	8.3	15.4	14.8	16.8	23.0	31.8	13.7	16.8	17.1	27.1	27.8	15.8	28.0	28.9	27.0	24.5	21.0	26.3	22.6
9	5.5	15.8	21.7	33.3	28.0	23.3	19.2	15.5	25.1	26.1	30.8	27.5	19.2	21.4	24.7	27.2	28.5	26.6	32.6	29.0	21.8	23.6	30.6
10	13.5	16.1	14.3	23.5	29.7	21.5	18.6	13.3	12.7	16.5	27.1	20.7	16.1	12.9	11.8	22.8	14.5	14.4	15.9	19.1	17.4	7.8	11.0
11	17.2	10.8	8.5	10.4	18.2	20.3	17.2	15.9	13.7	6.3	11.5	13.8	16.0	12.5	5.9	9.6	1.4	9.6	5.8	8.1	8.3	4.9	8.5
12	27.4	11.4	3.8	5.0	5.2	8.6	13.5	10.6	4.6	4.4	3.3	7.1	8.1	5.8	4.4	15.8	2.3	2.5	1.9	2.8	1.0	1.1	1.7
13	11.5	8.0	3.3	1.5	4.1	2.5	5.5	8.5	3.4	2.8	2.5	1.7	2.8	2.6	2.4	6.1	0.0	0.6	0.7	0.6	1.5	0.6	0.5
14	8.6	1.5	2.3	1.3	1.8	1.9	2.2	4.2	3.6	0.7	1.4	1.2	1.3	1.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
15	7.5	3.0	1.8	0.9	1.4	1.0	1.0	1.6	0.5	0.9	0.7	0.1	0.5	0.9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
16	4.2	0.9	1.5	0.3	0.2	0.3	0.4	0.9	0.3	0.0	0.3	0.3	0.5	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	1.4	1.6	1.7	0.6	0.9	0.6	0.2	1.0	0.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 14. Average weight-at-age (kg-round) from the Okak stock unit commercial catch of Arctic charr, 1977-1999.

AVERAGE WEIGHT - AT - AGE

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
6	1.21	1.21	1.21	1.02	1.29	1.13	1.15	1.16	1.12	1.06	1.14	1.16	1.26	1.13	1.32	-	0.88	1.02	1.03	0.88	0.73	0.77	1.14
7	1.48	1.48	1.48	1.20	1.24	1.38	1.25	1.26	1.27	1.32	1.30	1.33	1.32	1.40	1.48	1.15	1.03	1.27	1.10	1.24	0.98	1.25	1.42
8	1.66	1.66	1.66	1.59	1.51	1.58	1.43	1.41	1.45	1.50	1.43	1.37	1.47	1.55	1.51	1.57	1.29	1.47	1.31	1.37	1.18	1.40	1.54
9	1.85	1.85	1.85	1.77	1.73	1.66	1.56	1.46	1.52	1.64	1.58	1.53	1.51	1.69	1.57	1.41	1.51	1.73	1.36	1.59	1.47	1.53	1.65
10	1.98	1.98	1.98	1.81	1.93	1.75	1.66	1.58	1.67	1.73	1.64	1.60	1.65	1.79	1.80	1.64	1.62	1.90	1.60	1.72	1.53	1.69	1.77
11	2.02	2.02	2.02	1.89	1.89	1.76	1.69	1.52	1.61	1.85	1.64	1.63	1.68	1.76	1.83	1.84	2.32	1.77	1.59	1.69	1.59	1.66	1.89
12	2.36	2.36	2.36	2.05	1.93	1.94	1.76	1.62	1.90	1.85	1.75	1.76	1.77	1.88	1.66	1.63	2.30	1.95	1.68	1.61	2.12	1.67	1.93
13	2.30	2.30	2.30	2.47	2.10	2.01	1.73	1.64	1.77	1.77	1.87	1.85	1.86	1.74	1.72	1.84	-	1.21	1.87	2.09	1.55	2.26	1.88
14	2.38	2.38	2.38	2.10	1.87	2.02	1.52	1.68	1.66	1.72	1.97	1.74	1.99	1.84	1.63	-	-	-	3.93	-	-	2.77	-
15	2.48	2.48	2.48	1.83	1.93	2.18	1.81	1.76	2.04	1.60	2.04	2.31	1.89	1.63	-	-	-	3.21	-	-	-	-	-
16	2.30	2.30	2.30	2.82	1.54	1.65	1.70	1.66	1.89	2.72	2.48	1.91	1.76	-	1.63	-	-	-	-	-	-	-	-
17	2.30	2.30	2.30	2.37	2.39	2.56	2.73	2.10	2.07	-	-	-	2.17	-	-	-	-	-	-	-	-	-	-
18	2.30	2.30	2.30	2.58	3.17	1.84	2.07	-	3.16	1.68	-	-	2.30	-	-	-	-	-	-	-	-	-	-
19	2.30	2.30	2.30	2.69	-	-	2.07	1.43	1.37	-	-	-	-	1.84	-	-	-	-	-	-	-	-	-

MEAN AGE OF INDIVIDUALS IN CATCH

Age	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	12.00	10.08	9.53	9.58	10.11	9.96	10.05	10.14	9.47	9.10	9.82	9.46	9.43	9.19	8.65	9.03	8.44	8.8	8.74	8.88	8.56	8.17	8.61

MEAN WEIGHT OF INDIVIDUALS IN CATCH

Weight	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	2.20	1.95	1.86	1.77	1.83	1.72	1.60	1.51	1.54	1.60	1.58	1.53	1.56	1.64	1.58	1.58	1.37	1.59	1.36	1.50	1.21	1.36	1.62

Table 15. Summary of Atlantic salmon landings at Nain, Labrador 1977 - 1999. Catch, effort and CUE as in Arctic charr landings tables.

Year		Catch	Effort	CUE
1977		41581	560	74
1978		48945	562	87
1979		35722	650	55
1980		60332	619	97
1981		48124	598	80
1982		32974	491	67
1983		20105	542	37
1984		15596	339	46
1985		14653	308	48
1986		20090	350	57
1987		14414	275	52
1988		20090	282	71
1989		29960	359	83
1990		12892	248	52
1991		2688	89	30
1992		2671	85	31
1993		1848	76	24
1994		1899	64	30
1995		2989	65	46
1996		254	24	11
1997		1159	32	36
1998		0	0	
1999		0	0	
Avg. 1994-98		1260	37	31
Avg. 1989-98		5636	104	38
Avg. 1974-99		18652	288	53
Total		428986		

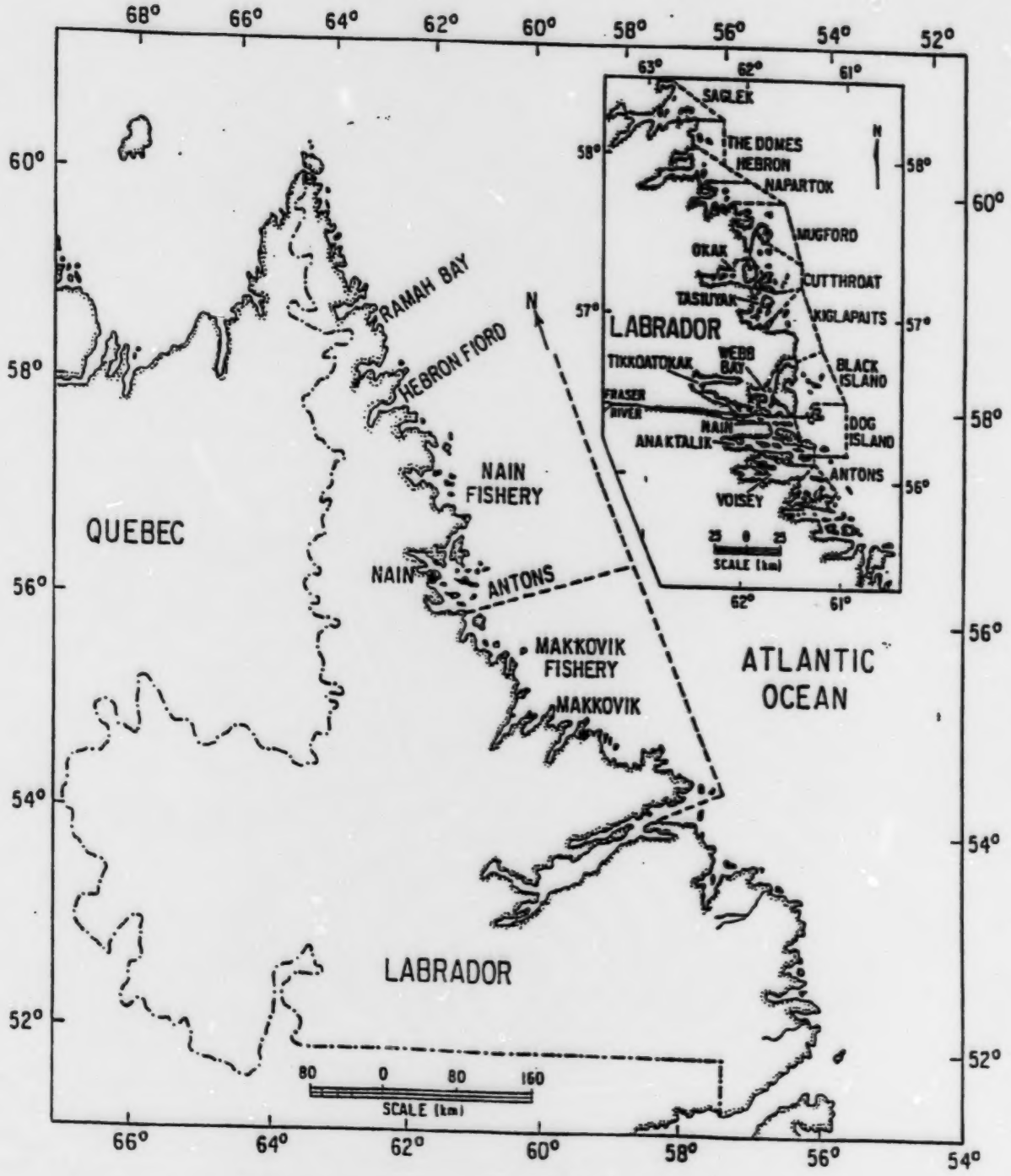

Fig 1: Location of the Nain and Makkovik Fishing Regions in northern Labrador. Insert illustrates the location of subareas within the Nain Fishing Region.

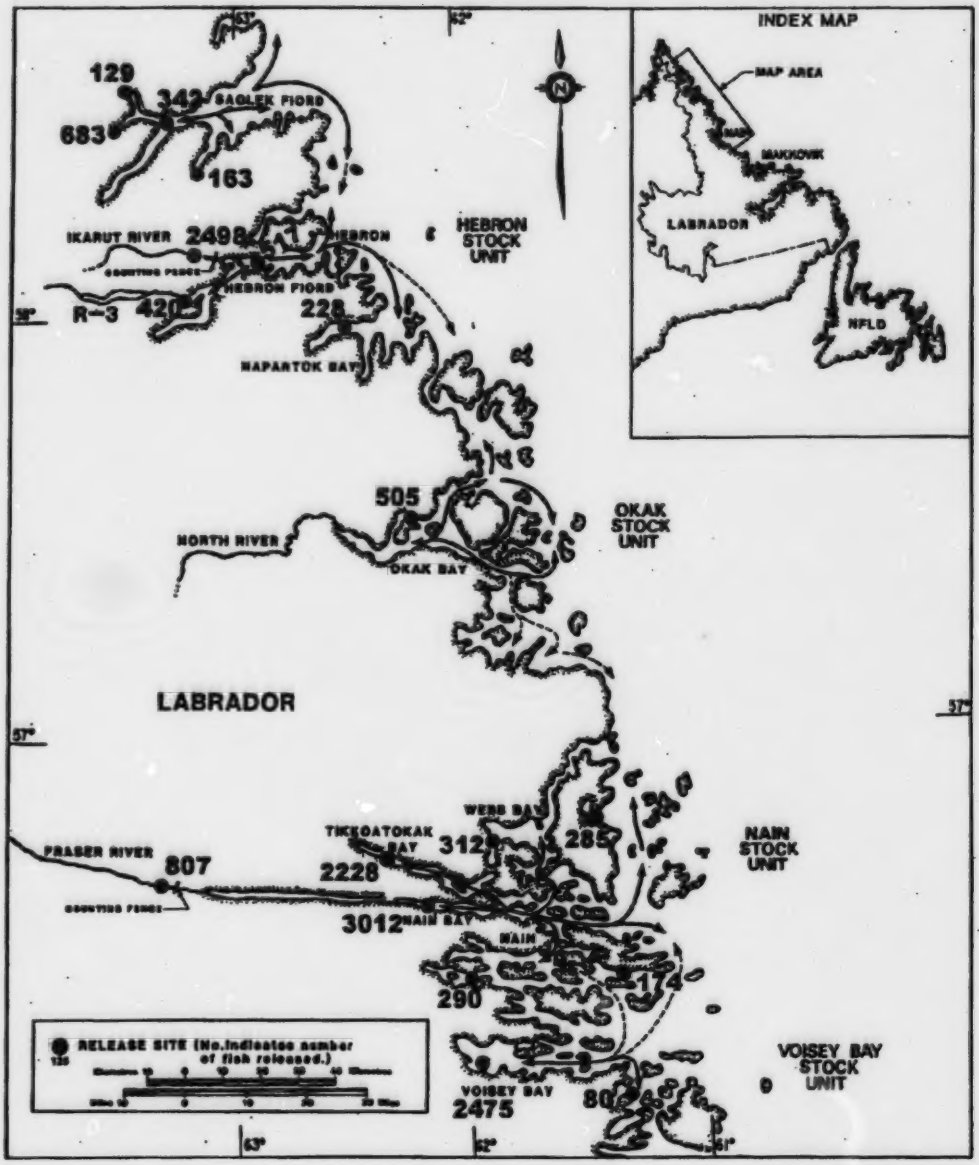

Figure 2. General patterns of ocean movements of anadromous Arctic charr in northern Labrador, showing numbers of fish tagged and release locations, 1974-1999. In some places, release locations have been generalized. Dominant migrations are illustrated with solid continuous lines; fine broken lines represent minor movements.

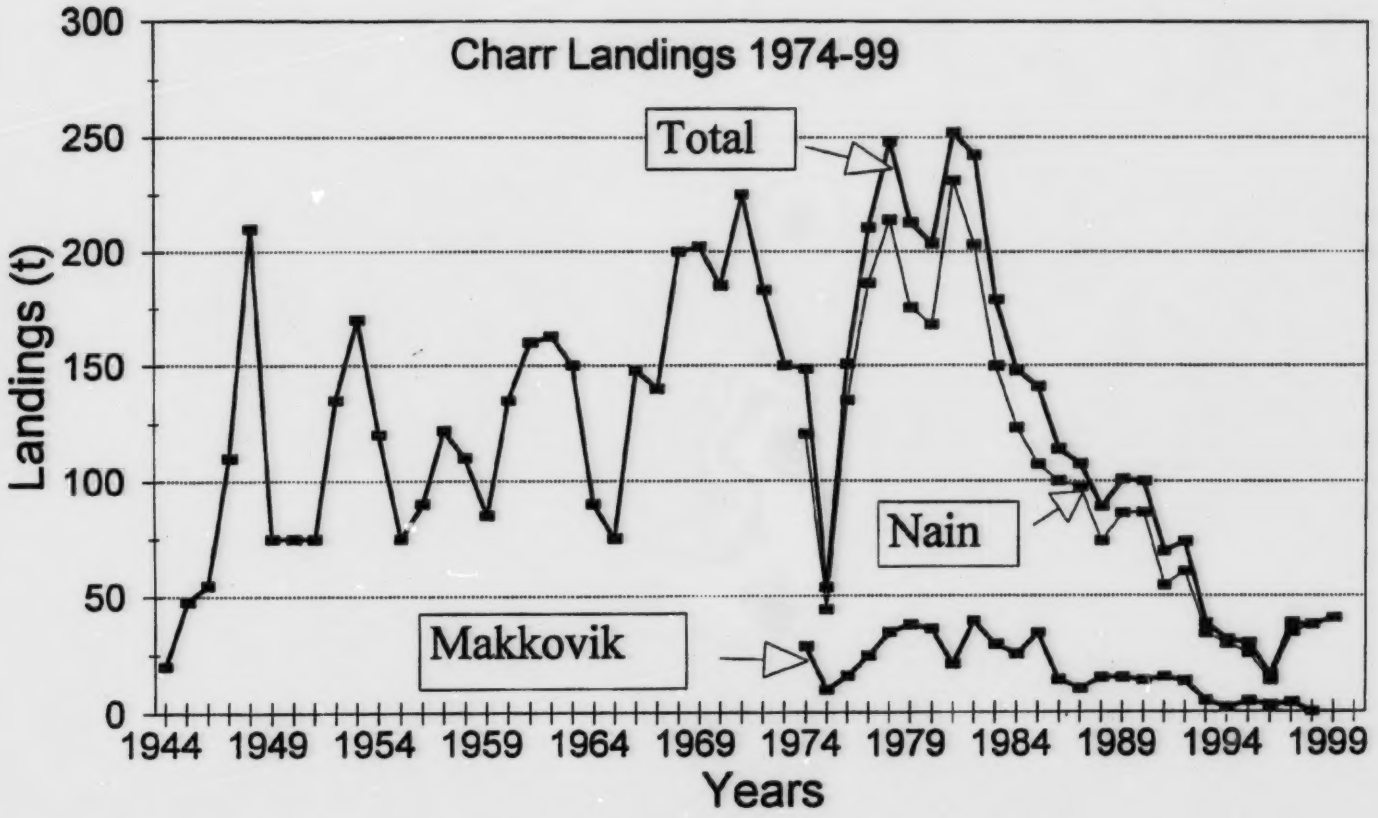

Fig 3. Summary of northern Labrador Arctic charr Landings (tonnes), 1944-99 with separate landings for Nain and Makkovik from 1974 to 1999.

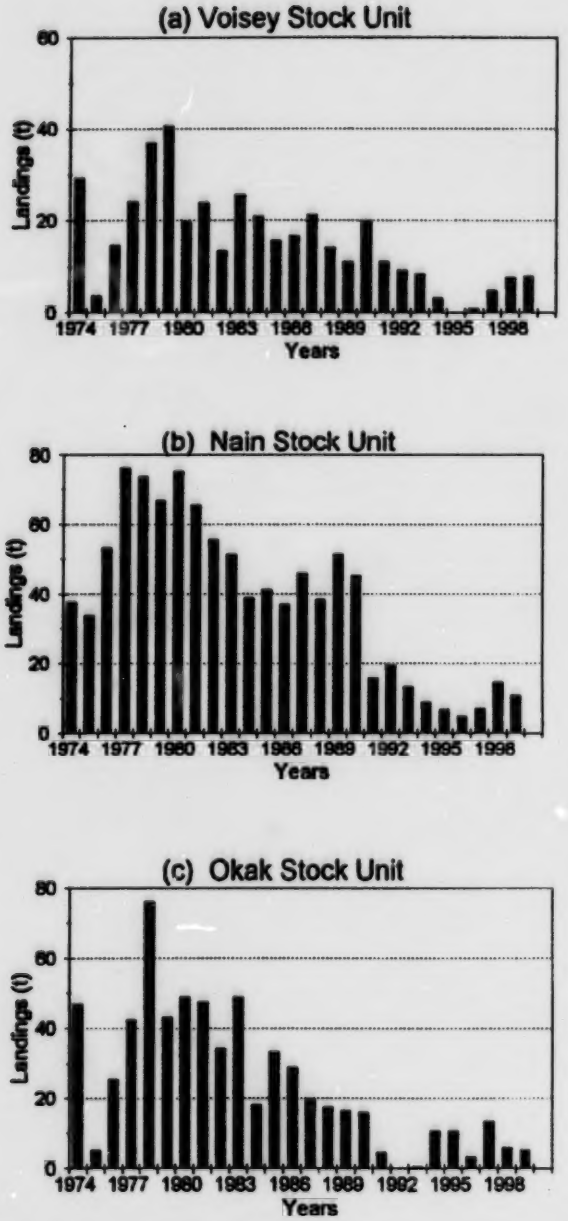

Fig 4. Commercial Landings of anadromous Arctic charr from the (a) Voisey, (b) Nain, and (c) Okak stock units, 1974-99.

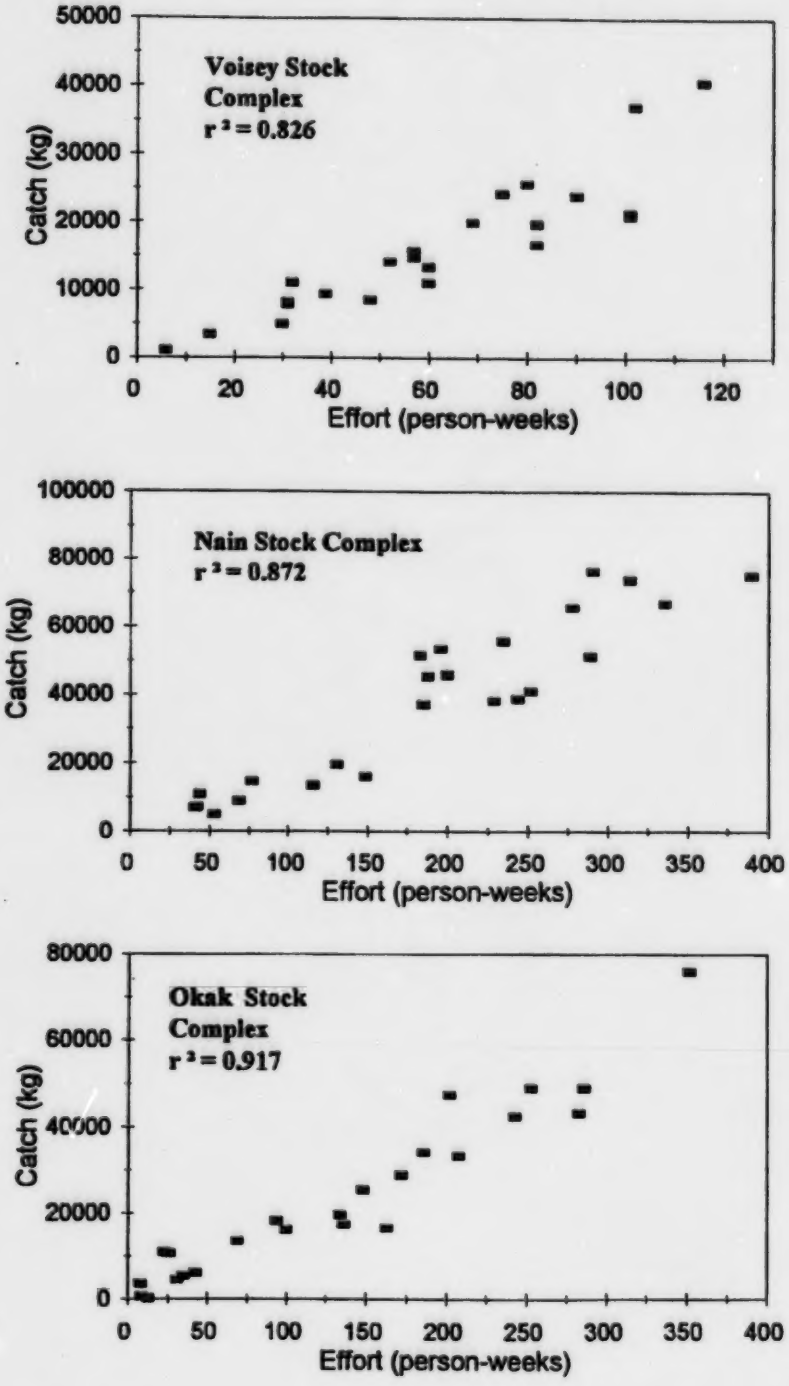

Fig. 5. Scatter plots of Arctic charr catch versus effort for various stock complex fishing areas in north Labrador.

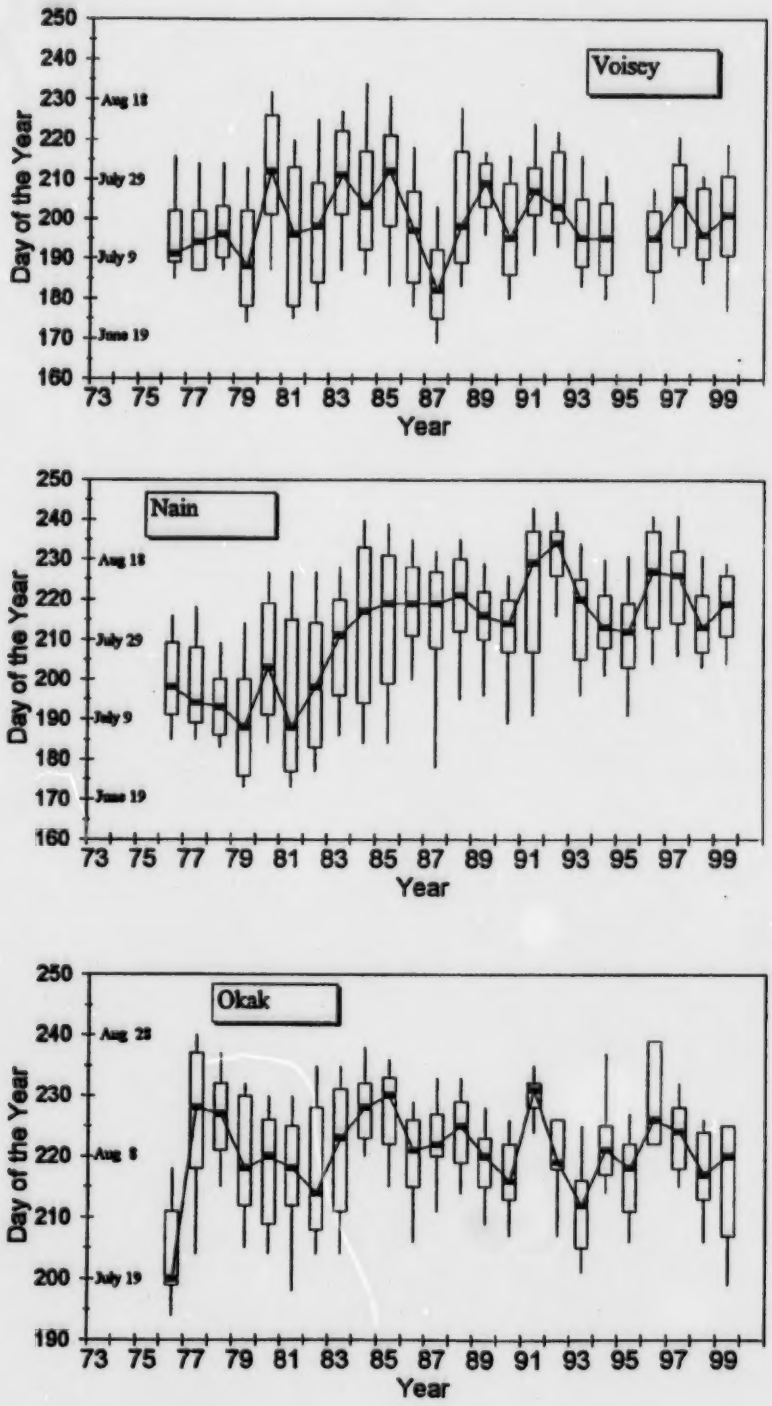

Figure 6. Commercial catch timing of the Voisey, Nain, and Okak stock complex Arctic charr fisheries, 1976 - 1999. Vertical lines represent the 10th and 90th percentiles of the day of the year of catch timing, the rectangle is the 25th and 75th percentiles, while the marker within the rectangle is the median catch timing.

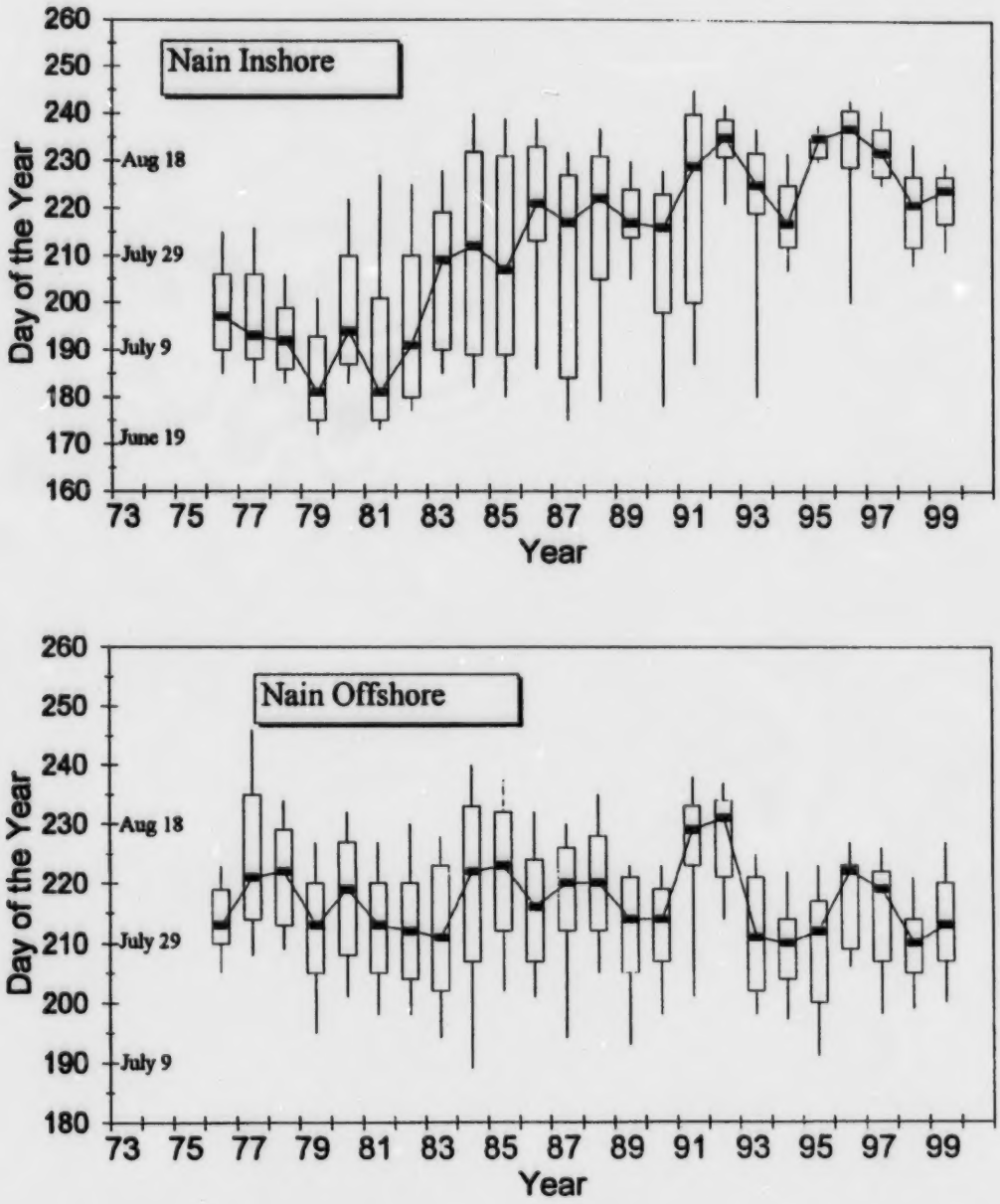

Figure 7. Commercial catch timing for the Nain stock complex Arctic charr fishery inshore and offshore fishing zones, 1976-1999. Vertical lines represent the 10th and 90th percentiles of the day of the year of catch timing, the rectangle is the 25th and 75th percentiles, while the marker within the rectangle is the median catch timing.

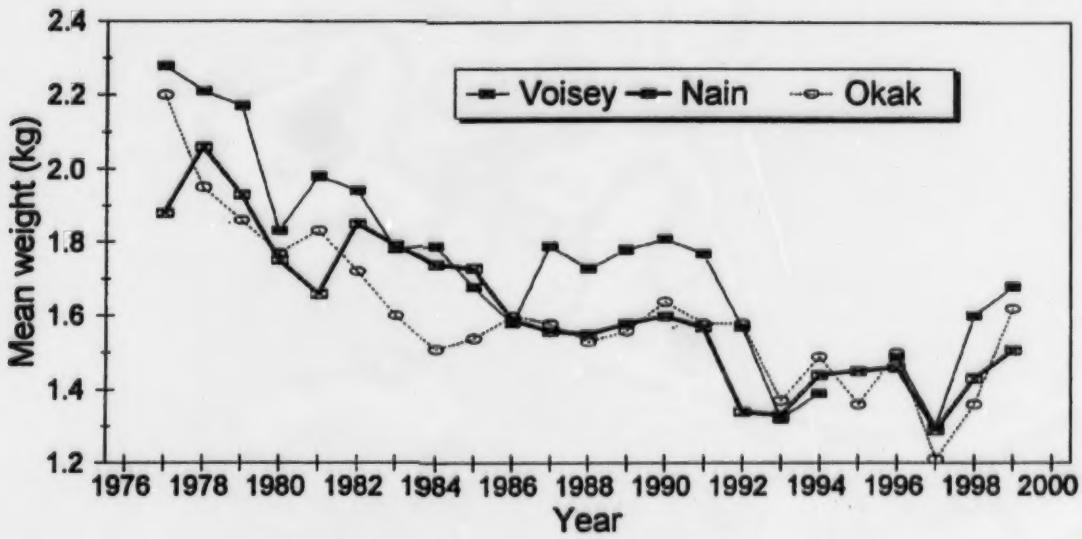

Fig. 8. Mean weight (kg-round) of anadromous Arctic charr from the Voisey, Nain and Okak stock complex fishing areas, 1977 - 1999.

Appendix 1, Arctic Charr Catch Statistics, 1974-1999
Summary of Catch and Effort Data For the Nain Fishing Region

Area=Artions

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)	9135	3489	3172	2111	4011	19371	8480	7870	6191	23082	13099	14212	13569
Effort (Person-wks)	34	20	6	20	17	63	32	38	24	63	82	51	67
C/E (Kg)	269	174	529	106	236	307	264	207	258	366	160	279	203
% > 2.3 Kg			21	24	28	22	14	13	12	9	7		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)	8611	8480	11019	12659	2813	413	1904	180			4121	3359	2787
Effort (Person-wks)	55	29	32	45	20	6	11	2			20	15	17
C/E (Kg)	157	292	344	281	141	69	173	90			206	224	164
% > 2.3 Kg													

Area=Volsey's Bay

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas						22500	22500	16100	16100	16000	16000	23400	
Catch (Kg)	20045	238	12232	22488	33597	21680	11557	16325	7688	2953	6113	1435	3065
Effort (Person-wks)	64	2	45	56	85	59	52	53	38	17	24	6	22
C/E (Kg)	313	119	272	402	395	371	222	308	202	174	338	239	139
% > 2.3 Kg			42	35	34	32	17	16	17	17	16		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)	12630	5577		7236	8156	8851	6556	3155		977	739	4363	5219
Effort (Person-wks)	54	26		24	43	36	36	13		6	10	16	14
C/E (Kg)	234	215		301	190	246	173	243		163	74	273	373
% > 2.3 Kg													

Area=Ansidalik

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas						21500	21500	8660	8660	11000	8100	8400	
Catch (Kg)	7821	2548	14670	21604	13075	14913	8045	9157	10836	2359	3980	7477	180
Effort (Person-wks)	28	10	45	63	55	76	53	32	27	24	34	39	7
C/E (Kg)	279	255	326	343	238	196	152	286	401	98	117	192	26
% > 2.3 Kg			36	38	27	20	12	10	11	11	12		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000		
Catch (Kg)	2002	1075	1175	454	1464	70	230	19					16
Effort (Person-wks)	18	12	13	5	17	3	6	1					1
C/E (Kg)	111	90	90	91	87	23	38	19					16
% > 2.3 Kg													

Appendix 1, Arctic Charr Catch Statistics, 1974-1999
Summary of Catch and Effort Data For the Nain Fishing Region

Area=Dog Island

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)	2659	653	212	2039	386	1440	3048	1516	1105	6856	6666	6682	3269
Effort (Person-wks)	38	40	11	49	25	61	86	37	38	62	66	62	32
C/E (Kg)	70	16	19	42	15	24	35	41	29	111	101	111	103
% > 2.3 Kg			11	9	6	15	11	14	7	8	10		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)	16881	11735	2794	7219	1240	2134	2218	1485	1199	1687	1411	4219	642
Effort (Person-wks)	86	88	27	44	14	16	18	14	11	13	12	19	10
C/E (Kg)	196	133	103	164	89	133	123	106	109	130	118	222	64
% > 2.3 Kg													

Area=Nain Bay

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas										5000			
Catch (Kg)	12461		3119	8464				5450	85	532	1686	2667	6437
Effort (Person-wks)	37		10	28				29	1	8	15	32	39
C/E (Kg)	337		312	302				188	85	67	126	83	165
% > 2.3 Kg			16	15				4		2	6		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)	3606	5179	20734	10265	4039	4762	2346	3349	366	1613	1740	5706	5556
Effort (Person-wks)	15	33	61	61	59	45	33	23	7	25	11	39	18
C/E (Kg)	254	157	340	168	68	106	71	146	55	65	158	146	309
% > 2.3 Kg													

Area=Tikkoatokak Bay

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas						39500	39500	28500	35000	35000	26000	12500	
Catch (Kg)	9960	27695	31568	39483	55061	37919	42131	28068	28263	16211	6618	6243	3641
Effort (Person-wks)	28	76	81	94	147	106	130	80	75	65	43	24	16
C/E (Kg)	356	364	390	420	374	351	324	351	377	249	200	260	240
% > 2.3 Kg			19	20	16	14	10	5	7	8	5		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000
Catch (Kg)	3606	2240	2636	1491	2296	2560	2068	1224	457	683	1577	537	108
Effort (Person-wks)	12	12	13	12	16	9	15	7	4	7	9	9	2
C/E (Kg)	301	187	203	124	143	284	139	175	114	98	175	60	54
% > 2.3 Kg													

Appendix 1, Arctic Charr Catch Statistics, 1974-1999
Summary of Catch and Effort Data For the Nain Fishing Region

Area=Webb Bay

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)	580	833	4550	2516	3472	3035	3008	8100	4807	15055	10476	5143	5890
Effort (Person-wks)	1	5	15	21	16	9	8	29	27	56	43	35	34
C/E (Kg)	580	167	303	120	217	337	376	279	171	269	244	147	173
% > 2.3 Kg			21	19	20	30	39	27	11	5	7		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000
Catch (Kg)	8424	6041	5804	4859	2343	3111	928						143
Effort (Person-wks)	27	33	17	10	10	16	8						1
C/E (Kg)	312	183	347	486	234	194	116						143
% > 2.3 Kg													

Area=Black Island

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)	4264	2101	2725	3389	2968	10632	20051	14413	11602	11028	7913	12750	17458
Effort (Person-wks)	60	62	48	65	81	92	130	94	79	87	62	68	72
C/E (Kg)	71	34	57	52	37	116	154	153	147	127	128	188	242
% > 2.3 Kg			8	10	14	7	6	7	8	4	5		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)	11151	12024	18222	20087	4490	6917	5601	2747	4792	858	2296	4139	4397
Effort (Person-wks)	50	61	60	65	37	44	41	24	22	8	11	16	15
C/E (Kg)	223	197	304	323	121	157	137	114	218	107	209	259	293
% > 2.3 Kg													

Area=Kiglapaits

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)	5131	1504	6089	5435	12097	17606	16543	21911	8326	20625	11431	6184	6963
Effort (Person-wks)	26	32	59	57	103	120	95	99	34	103	55	41	55
C/E (Kg)	197	47	103	95	117	147	174	221	245	200	208	151	127
% > 2.3 Kg			25	25	34	14	16	12	16	12	9		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)	1620	862	2605	1051	1110	653	524	529	354				2211
Effort (Person-wks)	14	9	22	10	15	4	4	4	4				8
C/E (Kg)	116	96	118	105	74	163	131	132	89				276
% > 2.3 Kg													

Appendix 1. Arctic Charr Catch Statistics, 1974-1999
Summary of Catch and Effort Data For the Nain Fishing Region

Area=Tasiuyak

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)	1467		281		2280	1837	1137		1060	1259	3423	4724	6749
Effort (Person-wks)	15		2		9	11	8		6	7	23	36	26
C/E (Kg)	98		141		253	167	142		177	180	149	131	260
% > 2.3 Kg			21		71	34	14		11	13	5		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)	6997	2823	3186	3302	1077	3083	1153	3675	4671	1044	4455	4195	6529
Effort (Person-wks)	61	22	23	17	5	13	3	11	9	2	16	31	32
C/E (Kg)	147	126	139	194	215	236	384	334	519	522	278	135	204
% > 2.3 Kg													

Area=Mugford

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)			1970	1374	1148	170	513			15			
Effort (Person-wks)			15	9	7	2	5			1			
C/E (Kg)			131	153	164	85	103			15			
% > 2.3 Kg			30	36	32	16	15						

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)													
Effort (Person-wks)													
C/E (Kg)													
% > 2.3 Kg													

Area=Okak Bay

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas								27300	27300	21000	27000	27000	27000
Catch (Kg)	34250	2354	17812	27592	36125	28171	17434	11049	9031	30732	13684	24746	20141
Effort (Person-wks)	105	15	52	107	104	123	65	46	26	147	30	119	91
C/E (Kg)	326	157	343	258	347	213	268	240	347	209	462	208	221
% > 2.3 Kg			29	26	18	11	8	10	7	7	2		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas	26000	22000	26000	26000	26000	26000	26000	26000	26000	26000	26000	26000	26000
Catch (Kg)	15695	12808	14973	12497	4112			10866	10377	3348	12630	5997	5232
Effort (Person-wks)	71	51	84	45	13			23	18	5	56	43	35
C/E (Kg)	221	247	178	278	316			472	576	670	226	139	149
% > 2.3 Kg													

Appendix 1, Arctic Charr Catch Statistics, 1974-1999
Summary of Catch and Effort Data For the Nain Fishing Region

Area=Cutthroat

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)	12641	2703	7526	15488	41148	17803	32397	37263	25699	19043	4570	8515	8756
Effort (Person-wks)	95	47	103	130	267	161	205	172	164	164	65	106	89
C/E (Kg)	133	58	73	119	154	111	158	217	157	116	70	80	98
% > 2.3 Kg			17	25	25	12	12	13	15	10	7		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)	3954	4842	1591	3628	320	180	578		259	77	885		
Effort (Person-wks)	70	89	84	55	18	13	9		8	3	15		
C/E (Kg)	56	54	19	66	18	14	64		32	26	59		
% > 2.3 Kg													

Area=Napartok

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)			28972	28039	8551	2486	752	291	16485				
Effort (Person-wks)			124	126	50	33	11	3	60				
C/E (Kg)			234	223	171	75	68	97	275				
% > 2.3 Kg			14	22	20	16	13	12	8				

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)					242	4414						4941	7430
Effort (Person-wks)					4	16						13	25
C/E (Kg)					60	276						380	297
% > 2.3 Kg													

Area=Hebron Fiord

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas									29072		20000		
Catch (Kg)				5957			2915	39901	37822		19531		
Effort (Person-wks)				37				106	98		112		
C/E (Kg)				161				376	386		174		
% > 2.3 Kg				16			19	34	23				

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)		543		643	20731	21252	5608						
Effort (Person-wks)		6		1	49	92	34						
C/E (Kg)		91		643	423	231	165						
% > 2.3 Kg													

Appendix 1, Arctic Charr Catch Statistics, 1974-1999
Summary of Catch and Effort Data For the Nain Fishing Region

Area=Domes

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)								5167	2843		978		
Effort (Person-wks)								19	14		10		
C/E (Kg)								273	189		98		
% > 2.3 Kg								36	17				

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)													
Effort (Person-wks)													
C/E (Kg)													
% > 2.3 Kg													

Area=Saglek Fiord

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)								24722	23791		5389		
Effort (Person-wks)								77	116		40		
C/E (Kg)								321	202		135		
% > 2.3 Kg								18	7				

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)							3247						
Effort (Person-wks)							4						
C/E (Kg)							812						
% > 2.3 Kg													

Area=Ramah

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)									7758		3110		
Effort (Person-wks)									26		25		
C/E (Kg)									298		124		
% > 2.3 Kg													

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)						172	560						
Effort (Person-wks)						2	2						
C/E (Kg)						86	280						
% > 2.3 Kg													

Appendix 1, Arctic Charr Catch Statistics, 1974-1999
Summary of Catch and Effort Data For the Nain Fishing Region

Area=Nachvak

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)												6142	1808
Effort (Person-wks)												18	4
C/E (Kg)												341	452
% > 2.3 Kg													

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)													
Effort (Person-wks)													
C/E (Kg)													
% > 2.3 Kg													

Area=Nain Fishery

	1974	1975	1976	1977*	1978	1979	1980	1981	1982	1983	1984	1985	1986
Quotas													
Catch (Kg)	120414	44118	134898	186165	213915	175263	167991	231221	203012	149732	123045	107120	98186
Effort (Person-wks)	531	309	616	863	966	918	880	914	856	804	729	637	554
C/E (Kg)	227	143	219	216	221	191	191	253	237	186	169	168	180
% > 2.3 Kg			24	25	25	17	12	16	13	8	6		

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Quotas													
Catch (Kg)	97379	74010	84837	86292	54455	58553	33562	27230	25080	13281	29854	37458	40271
Effort (Person-wks)	533	471	436	394	320	315	226	122	84	70	160	201	178
C/E (Kg)	183	157	195	219	170	186	149	223	299	190	187	186	226
% > 2.3 Kg													

* Includes 186 kg unaccounted for by area.